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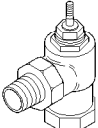
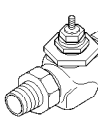
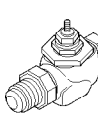
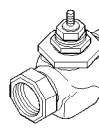
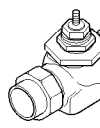
VS-7XXX Series

Valve Selection Guide for the MS-22353 Actuator General Instructions

Table-1 Select Valve Body including P Code (Valve Size, Cv Rating, Port Code).

Two-Way Valves

- 1/2" – 1-1/4" Union Angle, Union Straightway, Union Sweat
- 5/8" O.D. Flared
- 1/2" – 1-1/4" NPT Screwed
- 15 mm - 32 mm R_p Screwed

		Application				
		Chilled or Hot Water — 281°F Maximum — 35 psig Steam				
		Union Angle	Union Straightway	Flared	Screwed	Union Sweat
						
Size		1/2" – 1-1/4"	1/2" – 1-1/4"	5/8" O.D., SAE 45°	1/2" – 1-1/4"	1/2" – 1-1/4"
Valve Body Stem up Open (Normally Open)		VB-7211-0-3-P	VB-7211-0-4-P	VB-7212-0-4-P	VB-7213-0-4-P VB-7215-0-4-P ^a	VB-7214-0-4-P
Flow Type		Equal%	Equal%	Equal%	Equal%	Equal%
Material	Body	Bronze	Bronze	Bronze	Bronze	Bronze
	Seat	Bronze	Bronze	Bronze	Bronze	Bronze
	Stem	Stainless Steel	Stainless Steel	Stainless Steel	Stainless Steel	Stainless Steel
	Plug	Brass	Brass	Brass	Brass	Brass
	Packing	Spring Loaded TFE	Spring Loaded TFE	Spring Loaded TFE	Spring Loaded TFE	Spring Loaded TFE
	Disc	Composition	Composition	Composition	Composition	Composition
ANSI Pressure Class		250 (up to 400 psig below 150°F)		250	250 ^b (up to 400 psig below 150°F)	
Maximum Inlet Pressure psig (kPa)		35 (241)	35 (241)	35 (241)	35 (241)	35 (241)
Allowable Control Media Temp^c		20 to 281°F (-7 to 138°C)	20 to 281°F (-7 to 138°C)	20 to 281°F (-7 to 138°C)	20 to 281°F (-7 to 138°C)	20 to 281°F (-7 to 138°C)
Allowable Differential Pressure for Water Psig (kPa)^c		35 psi (241) Max. for normal life, refer to Siebe Environmental Controls Catalog, F-25683 for cavitation limitations.				
Allowable Differential Pressure for Steam		20 psi (138 kPa)	20 psi (138 kPa)	20 psi (138 kPa)	20 psi (138 kPa)	20 psi (138 kPa)
To Select a Port Code (P)						
P Code	Valve Size	Cv^d				
-1	1/2" or 5/8"	0.4	0.4	0.4	0.4	0.4
-2		1.3	1.3	1.3	1.3	1.3
-3		2.2	2.2	2.2	2.2	2.2
-4	3/4"	5.0	4.4	4.4	4.4	4.4
-5		5.5	5.5	—	5.5	5.5
-6	1"	8.5	7.5	—	7.5	7.5
-7		14	10	—	10	10
-8		16	14	—	14	14
-9	1-1/4"	20	20	—	20	20

^a Metric thread 15 to 32 mm (Rp1/2 to Rp 1-1/4).

^b Pressure Class PN16 per ISO 7268.

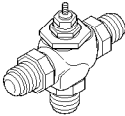
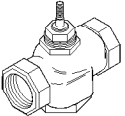
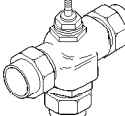
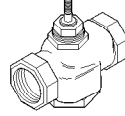
^c Maximum recommended differential in full open position. Do not exceed recommended differential pressure (pressure drop) or integrity of parts may be affected. Do not exceed close-off rating. Refer to Table-4 for maximum allowable temperature.

^d $kvs = m^3/h$ ($\Delta p = 100$ kPa)
 $kvs = Cv/1.156$.

Table-2 Select Valve Body including P Code (Valve Size, Cv Rating, Port Code).

Three-Way Valves

- 5/8" O.D. Flared
- 1/2" – 1-1/4" NPT Screwed
- 15 mm - 32 mm Screwed
- 1/2" – 1-1/4" Union Sweat

		Application			
		Chilled or Hot Water — 281°F Maximum			
		Flared	Screwed	Union Sweat	Screwed
					
Size		5/8" OD., SAE 45°	1/2" – 1-1/4"	1/2" – 1-1/4"	1/2" – 1-1/4"
Valve Body		VB-7312-0-4-P	VB-7313-0-4-P VB-7315-0-4-P ^a	VB-7314-0-4-P	VB-7323-0-4-P
Flow Type		Mixing	Mixing	Mixing	Diverting
Material	Body	Bronze	Bronze	Bronze	Bronze
	Seat	Bronze	Bronze	Bronze	Bronze
	Stem	Stainless Steel	Stainless Steel	Stainless Steel	Stainless Steel
	Plug	Brass	Brass	Brass	Stainless Steel
	Packing	Spring Loaded TFE	Spring Loaded TFE	Spring Loaded TFE	Spring Loaded TFE
	Disc	None	None	None	None
ANSI Pressure Class		250	250 ^b (up to 400 psig below 150°F)		
Allowable Control Media Temp^c		20 to 281°F (-7 to 138°C)	20 to 281°F (-7 to 138°C)	20 to 281°F (-7 to 138°C)	20 to 281°F (-7 to 138°C)
Allowable Differential Pressure for Water psig (kPa)^c		35 psi (241) maximum for normal life, refer to Siebe Environmental Controls Catalog, F-25683 for cavitation limitations.			
To Select a Port Code (P)					
P Code	Valve Size	Cv^d			
-2	1/2" or 5/8"	2.2	2.2	2.2	—
-4		4.4	4.4	4.4	4.4
-6	3/4"	—	7.5	7.5	7.5
-8	1"	—	14	14	15
-9	1-1/4"	—	20	20	20

^a Metric thread 15 to 32 mm (Rp 1/2 to Rp 1-1/4).

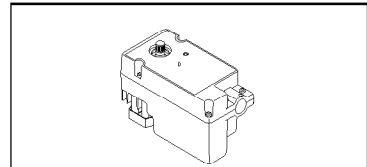
^b Pressure Class PN16 per ISO 7268.

^c Maximum recommended differential in full open position. Do not exceed recommended differential pressure (pressure drop) or integrity of parts may be affected. Do not exceed close-off rating. Refer to Table-4 for maximum allowable temperature.

^d $kvs = m^3/h (\Delta p = 100 \text{ kPa})$
 $kvs = Cv/1.156$.

Table-3 Close-off Pressure Ratings.

Linkage for 1/2" — 1-1/4" valve is provided with actuator (AV-643 available for field service requirements).



Two-Way Valves

Applications	Actuator	Valve Linkage	Valve Body	P Code	Size	Close-off Pressure Ratings (psi) ^a
Hot Water Chilled Water Steam ^b	MS-22353	Supplied with actuator	VB-7211-0-3-P	-1,-2,-3,-4	1/2" or 5/8"	170
			VB-7211-0-4-P		3/4"	76
			VB-7212-0-4-P	-7,-8	1"	41
			VB-7213-0-4-P		1-1/4"	26

Three-Way Valves

Applications	Actuator	Valve Linkage	Valve Body	P Code	Size	Stem Down	Stem Up
Hot Water Chilled Water Steam ^b	MS-22353	Supplied with actuator	VB-7312-0-4-P	-2, -4	1/2" or 5/8"	101	118
			VB-7313-0-4-P		3/4"	55	59
			VB-7314-0-4-P	-8	1"	35	37
			VB-7315-0-4-P		1-1/4"	22	23
			VB-7323-0-4-P	-4	1/2"	250	250
					3/4"		
					1"		
	-9	1-1/4"					

^a $kPa = (psi) \times (6.85)$.

^b Maximum recommended differential in full open position. Do not exceed recommended differential pressure (pressure drop) or integrity of parts may be affected. Do not exceed close-off rating. Refer to Table-4 for maximum allowable temperature.

Two-Way

Note: Close-off pressure ratings apply when valves are installed with pressure under the seat.

Install to close against flow. Arrow on body indicates flow direction.

Three-Way

Note: Close-off ratings for mixing valves (two inlets, one outlet):

- Stem Up = "A" Port, Stem Down = "B" Port.
- Stem Up rating equals pressure at "A" minus pressure at "B."
- Stem Down rating equals pressure at "B" minus pressure at "A."

Table-4 Actuator Model Chart.

Part Number	Power Input			Feedback 2 to 10 Vdc	Maximum Temperature of Media in the Valve Body (Check Rating of the Valve)	Maximum Actuator Ambient Temperature	Dew Point Temperature
	Voltage (+10/-15%)	Hz	VA				
MS-22353 ^a	24	50	60	4	Yes	281°F (138°C)	115°F (46°C)
						220°F (104°C)	140°F (60°C)

^a The minimum actuator ambient temperature and the minimum temperature of media in the valve body is 40°F (4°C).

^b The dew point temperature cannot be more than 48°F (26.7°C) above the fluid temperature.

Table-5 Proportional Valve Actuator Factory Available Valve Assemblies.

Actuator Part Number ^a	MS-22353	
Actuator Code for Factory Available Assembly	256	
P Code	Valve Body Part Number	Factory Available Valve Assembly Part Number
-1, -2, -3, -4, -5, -6, -7, -8, -9	VB-7211-0-3-P	VS-7211-256-3-P
	VB-7211-0-4-P	VS-7211-256-4-P
	VB-7213-0-4-P	VS-7213-256-4-P
	VB-7215-0-4-P	VS-7215-256-4-P
-1, -2, -3, -4	VB-7212-0-4-P	VS-7212-256-4-P
-2, -4	VB-7312-0-4-P	VS-7312-256-4-P
-2, -4, -6, -8, -9	VB-7313-0-4-P	VS-7313-256-4-P
	VB-7315-0-4-P	VS-7315-256-4-P

^a Actuator includes integral linkage; AV-643 linkage kit available for field service requirements.

Table-6 Valve Flow Patterns.

Body Part Number	Flow Type	Stem Up		Stem Down	
		Flow B to AB	Port A Closed	Flow A to AB	Port B Closed
VB-7312-0-4-P VB-7313-0-4-P VB-7314-0-4-P VB-7315-0-4-P	3-Way Mixing	Flow B to AB	Port A Closed	Flow A to AB	Port B Closed
VB-7323-0-4-P	3-Way Diverting	Flow B to AB	Port A Closed	Flow B to A	Port AB Closed
VB-7211-0-3-P VB-7211-0-4-P VB-7212-0-4-P VB-7213-0-4-P VB-7214-0-4-P VB-7215-0-4-P	2-Way	Flow A to AB		No Flow Valve Closed	

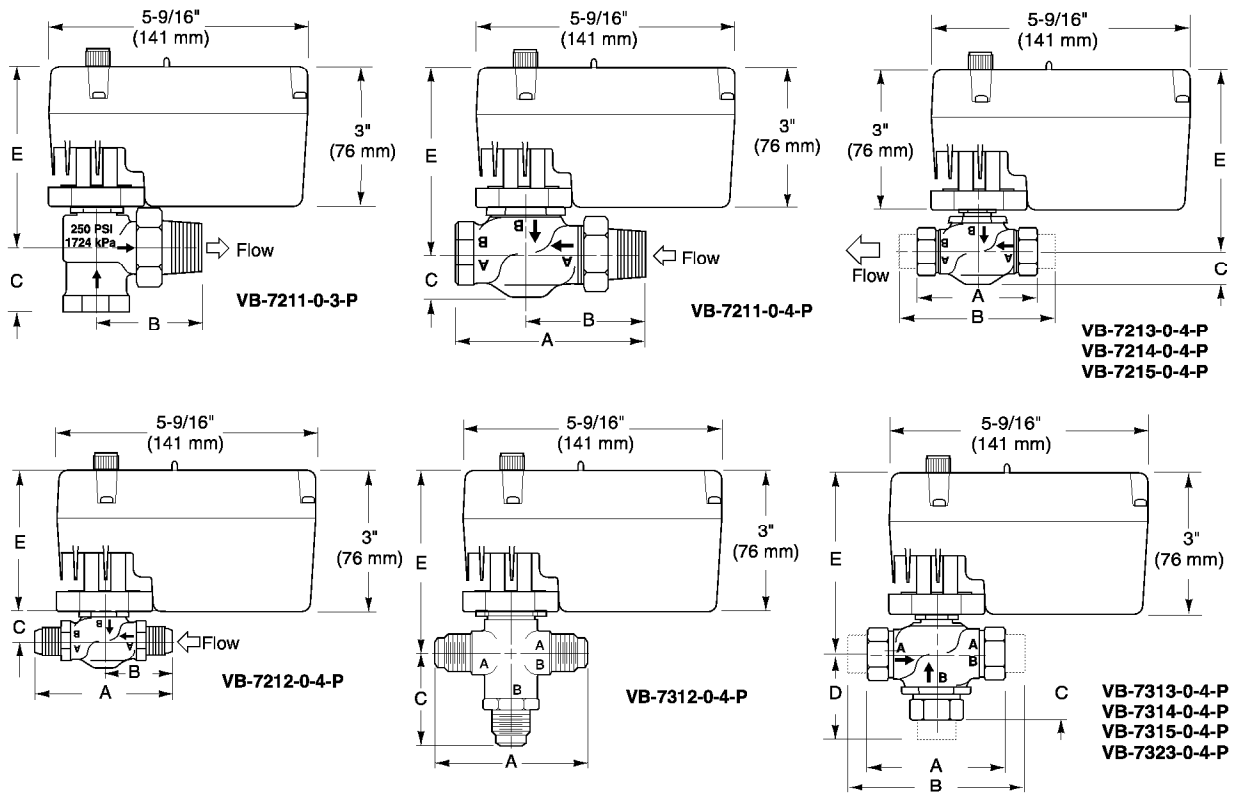


Table-7 Dimensions.

Part Number	Size in Inches (Millimetres)	Dimensions in Inches (Millimetres)				
		Valve Body				MS-22353
		A	B	C	D	
VB-7211-0-3-P	1/2 (18)	—	2-5/8 (67)	1-5/8 (41)	—	4-3/8 (111)
	3/4 (19)	—	2-3/4 (70)	1-3/4 (44)	—	4-1/2 (114)
	1 (25)	—	3-1/8 (79)	2 (51)	—	4-3/4 (120)
	1-1/4 (32)	—	3-3/8 (86)	2-1/8 (54)	—	4-7/8 (123)
VB-7211-0-4-P	1/2 (18)	4-1/4 (108)	2-3/4 (70)	1-7/16 (36)	—	4-7/16 (112)
	3/4 (19)	4-3/4 (121)	2-15/16 (75)	1-7/16 (36)	—	4-7/16 (112)
	1 (25)	6-1/8 (156)	3-13/16 (97)	2-1/8 (53)	—	4-15/16 (125)
VB-7212-0-4-P	1-1/4 (32)	6-3/8 (162)	4-1/16 (103)	1-7/16 (37)	—	5-1/4 (133)
	5/8 (16)	4 (102)	—	1 (25)	—	4-7/16 (112)
VB-7214-0-4-P	1/2 (18)	—	4-1/4 (108)	1-7/16 (36)	—	4-7/16 (112)
	3/4 (19)	—	5-1/2 (140)	1-7/16 (36)	—	4-15/16 (125)
	1 (25)	—	6-3/4 (171)	2-1/8 (53)	—	5-1/4 (133)
	1-1/4 (32)	—	6-7/8 (175)	1-7/8 (48)	—	5-1/2 (139)
VB-7213-0-4-P VB-7215-0-4-P	1/2 (18)	3 (76)	—	1-7/16 (36)	—	4-7/16 (112)
	3/4 (19)	3-5/8 (92)	—	1-7/16 (36)	—	4-15/16 (125)
	1 (25)	4-5/8 (117)	—	2-1/8 (53)	—	5-1/4 (133)
VB-7213-0-4-P VB-7215-0-4-P	1-1/4 (32)	4-5/8 (117)	—	1-7/8 (48)	—	5-1/4 (133)
	VB-7312-0-4-P	5/8 (16)	4 (102)	—	1-7/16 (36)	—
VB-7313-0-4-P VB-7315-0-4-P VB-7323-0-4-P	1/2 (18)	3 (76)	—	1-7/16 (37)	—	4-3/16 (106)
	3/4 (19)	3-5/8 (92)	—	1-7/16 (37)	—	4-1/2 (114)
	1 (25)	4-5/8 (117)	—	2-1/8 (53)	—	4-3/4 (120)
	1-1/4 (32)	4-5/8 (117)	—	1-5/8 (42)	—	4-3/4 (120)
VB-7314-0-4-P	1/2 (18)	—	4-1/4 (108)	—	2-7/8 (73)	4-3/16 (106)
	3/4 (19)	—	5-1/2 (140)	—	3-3/16 (80)	4-1/2 (114)
	1 (25)	—	6-3/4 (171)	—	3-7/8 (98)	4-3/4 (120)
	1-1/4 (32)	—	6-7/8 (175)	—	3-7/16 (89)	4-3/4 (120)

^a The actuator dimension includes 1/4" additional height to allow for the manual reset button.